

Appl. No. 10/065,510
Response Dated 10/13/2004
Reply to Office Action of July 13, 2004

REMARKS

This Amendment, submitted in response to the non-final Office Action dated July 13, 2004, is believed to be fully responsive to the points of rejection raised therein. Accordingly, a favorable reconsideration based on the merits is respectfully requested.

35 U.S.C. § 103 (a)

Claims 1-15 were rejected under 35 U.S.C. § 103 (a) as being unpatentable over US Publication 20020145103 (hereinafter "Bernardini") in view of US Patent 4,877,940 (hereinafter "Bangs"). According to the Examiner it would have been obvious for one of ordinary skill in the art to (i) modify Bernardini to include an algorithm of Bangs (i.e. space carving) that obtained the contour of only the leading edge or other designated part of the object because the leading edge is integral when aligning the object with another object, and to (ii) modify Bernardini to include the comparison means of Bangs because comparing an image to a reference is an efficient way of determining the acceptability of an object.

Applicants respectfully traverse the rejection of claims 1-15 under 35 USC § 103(a). For a *prima facie* case of obviousness, the Examiner must set forth the differences in the claim over the applied references, set forth the proposed modification of the references that would be necessary to arrive at the claimed subject matter, and explain why the proposed modification would be obvious. Applicants interpret the Office Action as stating that the proposed modification is to combine the method for obtaining the shape of an object of Bernardini with the weld puddle leading edge detection algorithm of Bangs. Applicants also interpret a further proposed modification is to combine the method of Bernardini with the means of comparison with a qualified body of Bangs. However, the Examiner has merely stated that the motivation for this combination is the leading edge is integral when aligning an object with another object. Applicants respectfully submit that the Examiner has not met his burden of establishing a *prima facie* case of obviousness. Firstly, Applicants submit that the Bernardini and Bangs references, taken alone or in any reasonable combination, do not show, disclose or teach all of the claim limitations of Applicants' claimed invention, particularly as recited in independent claims 1, 7, 10 and 14. Secondly, Applicants submit that no reasonable combination of the Bernardini and Bangs references would obtain Applicants' claimed invention.

Applicants' independent claims 1, 7, 10 and 14 each recite illuminating an object with a light source, obtaining an image of the object and processing the images using space carving techniques to ascertain the contour of a leading edge of the object whereby an accurate measurement of the leading edge can be made. Nowhere do the applied references show, disclose or teach the recited elements. Further, the applied references are not pertinent or relevant to the particular problems solved by Applicants' invention.

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The Bernardini reference merely discloses a technique for obtaining an image of an object by observing silhouettes of the object. The Bernardini reference is focused on extracting images from silhouettes of objects. Nowhere is there a recognition in Bernardini of the importance or measurement of leading edges. The Bangs reference merely discloses a method for monitoring welding processes and does not overcome the deficiencies of Bernardini. The focus of Bangs is to control and monitor an automated welding process and for alignment of welding points on an object. Nowhere is there a need for ascertaining the contour of a leading edge for accurate measurement. Applicants note that Bangs does not involve a measurement of the leading edge of the objects. Applicants respectfully submit that the Bangs reference is not relevant to Applicants claimed invention and that one skilled in the art of object imaging would not find the Bangs reference relevant or analogous. There is no teaching in either Bernardini or Bangs that would suggest any reasonable combination of the references.

Applicants further note that Bangs does not disclose a space-carving algorithm as argued in the Office Action. It is noted that while Bernardini employs a space carving means to obtain a model of an object, in contrast, Bangs details a method for thermographic imaging, tracking pixel brightness as an imaging method, and checks for a weld puddle crossing a perimeter of an imaginary box (Col 10, lines 43-47). Applicants submit that one skilled in the art concerned with accurately measuring a leading edge of a rigid object using space carving techniques, for example an airfoil, will not be reasonably expected to look at thermographic infra red imaging of weld pools, that are fluid and dynamic objects. Accordingly, Applicants submit that the references are non analogous. As noted, a space carving technique to measure the leading edge is absent in Bangs, and therefore, all claimed limitation are not present in the combination of the references.

The fact that two references can be combined is insufficient to establish a prima facie case of obviousness. Further, Applicants' submit that Applicants' claims may not be used guide book in hindsight for combining the applied references. Therefore, Applicants respectfully submit that the Examiner has failed to meet his burden of establishing a prima facie case of obviousness. Thus, Applicants respectfully submit that independent claims 1, 7, 10 and 14 are patentable over the references cited in the rejection. Dependent claims 2-9, 11-13 and 15 which ultimately depend from claims 1, 7, 10 and 14 are patentable for the same reasons. Therefore, Applicants' respectfully submit that claims 1-17 are allowable and requests that the rejections under 35 USC §103 (a) be withdrawn.

Claims 4, 7, 9 and 13-15 were rejected under 35 USC 103(a) over the Bernardini and Bangs references further in view of Miramonti et al. (US 5,864,640). Applicants respectfully traverse the rejection. In addition to the remarks made regarding Bernardini and Bangs, Applicants submit that Miramonti merely mentions the use of multiple cameras, and does not overcome the deficiencies of Bernardini and Bangs, taken alone or in combination. Accordingly claims 4, 7, 9 and 13-15 are believed to be patentable under 35 U.S.C. § 103 (a) at least for the reasons discussed as above.

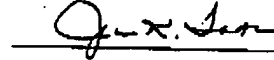
Appl. No. 10/065,510
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CONCLUSION

In view of the foregoing, Applicants respectfully submit that the application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are respectfully requested.

Should the Examiner believe that anything further is needed to place the application in even better condition for allowance, the Examiner is requested to contact Applicants' undersigned representative at the telephone number below.

Respectfully submitted,



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